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(54) Title: METHOD FOR IDENTIFYING SHORT MESSAGE ORIGINATOR CATEGORY IN A DIGITAL MOBILE PHONE NETWORK

## (57) Abstract

The present invention relates to a method for determining the originator information of a short message in a digital mobile phone network comprising at least one short message service center (SC), in which network a mobile services switching center (MSC) generates a call record from the forwarding operation of the short message. According to the invention, the short message originator categories call the short message service center (SC) using at least two different addresses, the short message service center (SC) modifies its address identification number used in addressing the mobile services switching center (MSC) to a form corresponding to the short message originator category, and finally, numeric analysis is used to identify the short message originator category from the address field of the call record generated by the mobile services switching center (MSC).

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**Method for identifying short message originator category in a digital mobile phone network**

5 The invention relates to a method according to the preamble of claim 1 for the identification of short message originator category in a digital mobile phone network.

10 According to the conventional techniques illustrated in Fig. 1, the short message service center SC of the short message service defined in a GSM system is formed by a network component external to the system, whereby the external service center can be addressed from the GSM network uniquely using a dedicated address identification number. The address identification number conforms to the numbering plan defined in the CCITT Recommendation E.164. In a short message (SMS MT) terminated at mobile station MS, the short message is forwarded to the  
15 mobile via a mobile services switching center MSC. Then, the mobile services switching center MSC generates a call record linked to the forwarding operation of the short message.

20 With a further reference to Fig. 1, some other possible originators of mobile terminated short messages are indicated. The data fields of the call record generated by the mobile services switching center MSC do not permit direct identification of whether the originator of the initial short message is another mobile station MS as indicated by arrow 1 in the drawing or some application system or program connected to the short message service center. Such a short-  
25 messages-generating system which is connected to the SC outside the GSM system may be, e.g., a paging application, a teletext system, an answering service, voice mail as indicated by arrow 2 or an e-mail system or terminal connection system as indicated by arrow 3.

It is an object of the present invention to overcome the drawbacks of the above-described prior-art techniques and to achieve an entirely novel method of defining the originator information of a short message in a digital mobile phone network.

5 The goal of the invention is accomplished by a scheme comprising each originator group, i.e., originator category of a short message calling the service center using its own address, the short message service center modifying its address identification number used in addressing the mobile services switching center to a form corresponding to the short message originator and finally using numeric analysis  
10 to identify the short message originator category from the address field of the call record generated by the mobile services switching center.

More specifically, the method according to the invention is characterized by what is stated in the characterizing part of claim 1.

15

The invention offers significant benefits.

The invention is capable of allocating the costs associated with the short message service to the short message originator if so desired. At will major user groups can  
20 be granted quantity discounts while small user groups are billed at a slightly higher rate. The delivery of short messages can be logged in statistics files by user group for planning tariff changes.

25 In the following, the invention will be examined in more detail with reference to exemplifying embodiments illustrated in the attached drawings, in which:

Figure 1 is a block diagram showing a prior-art system suited to accommodate the implementation of the present invention; and

30 Figure 2 is a schematic diagram illustrating the generation scheme of the short message service switching center address.

Referring to the diagrams, the identification of the original originator of a short message from a call record generated by a mobile services switching center MSC for a mobile terminated short message service SMS MT can be implemented by modifying the address information of the short message service center SC so that  
5 each short message originator sets the address of the service center SC at a different value. The short message forwarding protocol data unit, which for the reception of the short message by the SC is SMS-SUBMIT and for the delivery of the short message by the SC is SMS-DELIVERY, also contains information indicating the originator of the short message. This address identified by the originator  
10 is given as a call record parameter value in the Originating-Address data field.

The short message service center SC is provided with software capable of identifying the originator of the short message on the basis of the address given in the Originating-Address data field. Correspondingly, the short message service center  
15 SC can, in accordance with the message originating party, alter the address identification number shown by the short message service center SC itself to the mobile services switching center MSC. Hence, a physically single SC can have a plurality of logically separate SC's forwarding mobile short messages terminated at different mobiles. The originating party of a short message can be identified  
20 uniquely from the SC\_Address value of the call record generated by the mobile services switching center MSC. In the postprocessing of charging data, numeric analysis can be performed on the address field of the SC, and thus, the short messages initiated by the different originator categories can be priced differently for the receiving parties. Referring to Fig. 2, the processing principles of the SC  
25 address data described above is shown in a block diagram. When expressed in the international format, the address number of the service center SC in a GSM network may in a short message terminated to a mobile station be expressed, e.g., as listed below:

30 SC\_address +358 50 3456 700 - address in short messages originated by  
other mobile stations

- |   |                  |   |
|---|------------------|---|
|   | +358 50 3456 701 | - address in short messages generated by the answering service    |
|   | +358 50 3456 702 | - address in short messages originated by e-mail                  |
| 5 | +358 50 3456 703 | - address in short messages transmitted via a terminal connection |
|   | -----            | - -----   |
|   | +358 50 3456 711 | - address in short messages generated by the fax service          |
|   | -----            | - -----   |

Also arbitrary numbering can be used, whereby the address selection of the service center need not comprise consecutive addresses of the CCITT Recommendation E.164, but rather, the addresses of the SC may be chosen arbitrarily for each terminating short message type unrestrictedly from any point of the numbering plan space.

**Claims:**

1. A method for determining the originator information of a short message in a digital mobile phone network comprising at least one short message service center (SC), in which network a mobile services switching center (MSC) generates a call record from the forwarding operation of the short message,

c h a r a c t e r i z e d in that

10 the short message originator categories call the short message service center (SC) using at least two different addresses, the short message service center (SC) modifies its address identification number used in addressing the mobile services switching center (MSC) to a form corresponding to the short message originator category, and finally, numeric analysis is used to identify the short message  
15 originator category from the address field of the call record generated by the mobile services switching center (MSC).

2. A method as defined in claim 1, c h a r a c t e r i z e d in that each short message originator category uses an individual address for calling the service  
20 center.

3. A method as defined in claim 1 or 2, c h a r a c t e r i z e d in that the short message originator category information is utilized in network capacity planning.

25 4. A method as defined in claim 1, c h a r a c t e r i z e d in that the numeric analysis is performed in the mobile phone network.

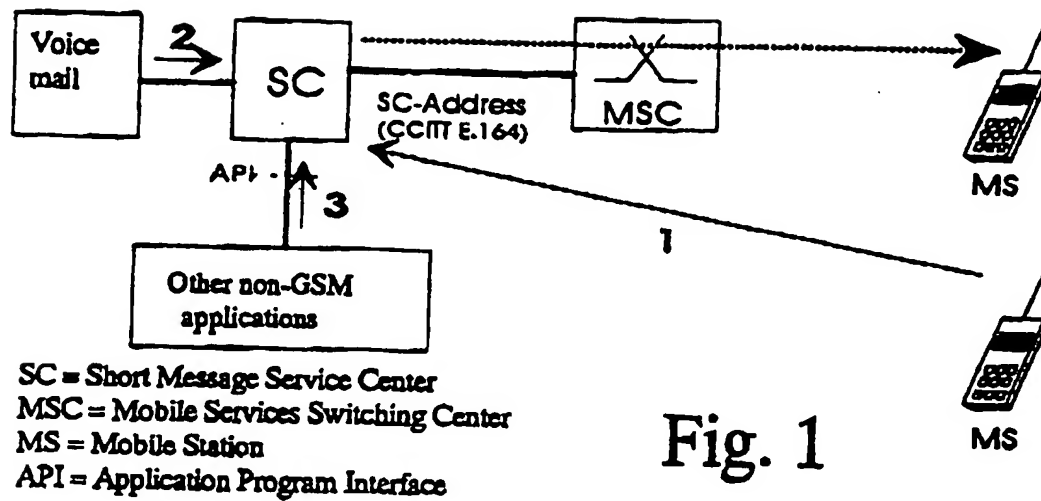


Fig. 1

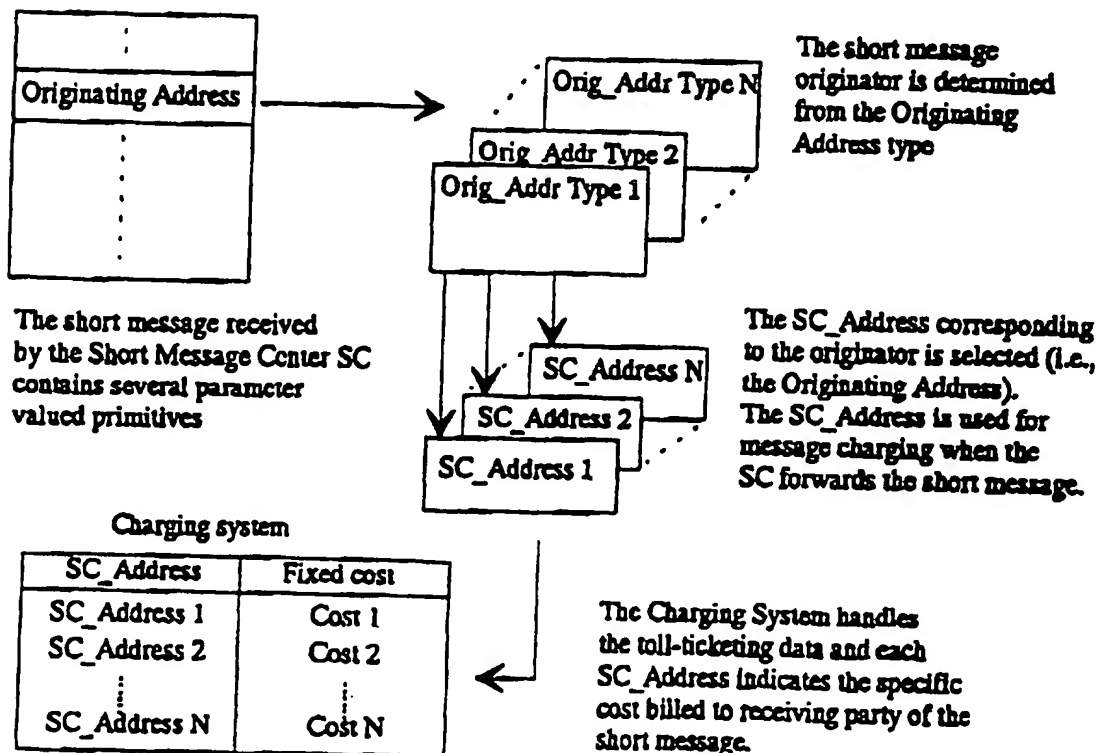


Fig. 2

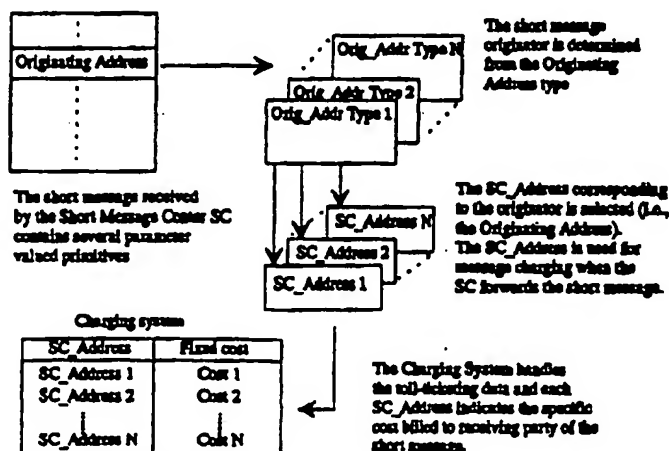




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<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>(21) International Application Number: PCT/FI95/00420</p> <p>(22) International Filing Date: 9 August 1995 (09.08.95)</p> <p>(30) Priority Data: 943709 10 August 1994 (10.08.94) FI</p> <p>(71) Applicant (for all designated States except US): OY RADI- OLINJA AB [FI/FI]; Tekniikantie 12, FIN-02150 Espoo (FI).</p> <p>(72) Inventor; and</p> <p>(75) Inventor/Applicant (for US only): SOUKOLA, Joni [FI/FI]; Jämaräntäival 11 B 54, FIN-02150 Espoo (FI).</p> <p>(74) Agents: LAINE, Seppo et al.; Seppo Laine OY, Lönnrotinkatu 19 A, FIN-00120 Helsinki (FI).</p> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).</p> <p><b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <i>In English translation (filed in Finnish).</i></p> <p>(88) Date of publication of the international search report: 2 May 1996 (02.05.96)</p> </td> </tr> </table>			<p>(21) International Application Number: PCT/FI95/00420</p> <p>(22) International Filing Date: 9 August 1995 (09.08.95)</p> <p>(30) Priority Data: 943709 10 August 1994 (10.08.94) FI</p> <p>(71) Applicant (for all designated States except US): OY RADI- OLINJA AB [FI/FI]; Tekniikantie 12, FIN-02150 Espoo (FI).</p> <p>(72) Inventor; and</p> <p>(75) Inventor/Applicant (for US only): SOUKOLA, Joni [FI/FI]; Jämaräntäival 11 B 54, FIN-02150 Espoo (FI).</p> <p>(74) Agents: LAINE, Seppo et al.; Seppo Laine OY, Lönnrotinkatu 19 A, FIN-00120 Helsinki (FI).</p>	<p>(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).</p> <p><b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <i>In English translation (filed in Finnish).</i></p> <p>(88) Date of publication of the international search report: 2 May 1996 (02.05.96)</p>
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## (57) Abstract

The present invention relates to a method for determining the originator information of a short message in a digital mobile phone network comprising at least one short message service center (SC), in which network a mobile services switching center (MSC) generates a call record from the forwarding operation of the short message. According to the invention, the short message originator categories call the short message service center (SC) using at least two different addresses, the short message service center (SC) modifies its address identification number used in addressing the mobile services switching center (MSC) to a form corresponding to the short message originator category, and finally, numeric analysis is used to identify the short message originator category from the address field of the call record generated by the mobile services switching center (MSC).

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## INTERNATIONAL SEARCH REPORT

International application No.

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC6: H04Q 7/22 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
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<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9409599 A1 (NOKIA TELECOMMUNICATIONS OY), 28 April 1994 (28.04.94), page 8, line 18 - page 9, line 6  --	1
A	WO 9326131 A1 (NOKIA TELECOMMUNICATIONS OY), 23 December 1993 (23.12.93), page 2, line 34 - page 3, line 22  --	1
A	WO 9407338 A1 (NOKIA TELECOMMUNICATIONS OY), 31 March 1994 (31.03.94), page 4, line 35 - page 5, line 19  --	1
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A	<p>MICHEL MOULY, MARIE-BERNADETTE PAUTET, The GSM System for Mobile Communications, Palaiseau, France, 1992, page 560, first two paragraphs</p> <p>-- -----</p>	1

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

05/02/96

International application No.  
PCT/FI 95/00420

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A1- 9409599	28/04/94	NONE	
WO-A1- 9326131	23/12/93	NONE	
WO-A1- 9407338	31/03/94	NONE	